

MR2919-17

OCT 19 2009

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**  
**BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In Re Appl. of: Teresa H. Meng, et al. : Art Unit: 2611  
Filed: 12 October 1999 : Examiner: E.Y. Z. Puente  
Serial Number: 09/416,098 : Before the Board of Appeals  
: Appeal No.  
Title: METHOD AND APPARATUS FOR ELIMINATING  
THE EFFECTS OF FREQUENCY OFFSETS IN  
A DIGITAL COMMUNICATION SYSTEM

**REQUEST FOR REHEARING UNDER 37 C.F.R. § 41.52**

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Sir:

For the reasons set forth below, Applicants hereby Request Rehearing Under 37 C.F.R. § 41.52 in response to the Decision on Appeal dated 19 August 2009 in the above-referenced Patent Application.

**I. INTRODUCTION**

The 19 August 2009 Decision affirmed the Examiner's rejection of the Claims on appeal under 35 U.S.C. § 112, first paragraph. In upholding the rejection, the Board found the originally filed Specification to provide sufficient written description for the Claimed limitations including both carrier frequency

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offset correction and sample frequency offset correction. The Board, however, found the Specification non-enabling as to the Claimed limitations, for the reason that it fails to enable correction for the two errors "*simultaneously*." More specifically, the Board found that the Specification fails to disclose how these corrections could be implemented to "*occur[] together at the same time*," (Decision, page 11).

In affirming the rejection of Claims on this basis, it is believed the Board misapprehended or overlooked the claimed subject matter as follows:

A. The Claims on Appeal nowhere recite the "*simultaneous[]*," "*same time*" occurrence of the two types of frequency offset correction; and,

B. Requiring such simultaneous occurrence of the two frequency offset corrections reflects a technically flawed understanding of the subject matter disclosed and claimed in the subject Patent Application.

## II. ARGUMENT

### A. The Claims on Appeal Nowhere Recite the *Simultaneous, Same Time* Occurrence of the Two Types of Frequency Offset Correction

The Claims on Appeal recite the use of both carrier frequency and sampling frequency offset correction, but they nowhere require the simultaneous occurrence of such. This requirement for "*simultaneous*" occurrence was one that the Examiner read into the Claims on the mistaken notion that such carrier frequency

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offset and sampling frequency offset corrections must be separately performed, and that “[t]hese two frequency offsets corrections are *not feasible in combination*,” (Ex’s Answer, page 5, lines 21-22; *emphasis added*). There is no sound basis for this simultaneity requirement. As discussed more fully below, the two frequency offset corrections may both certainly be applied to a signal, but the nature of each normally precludes their simultaneous application. The corrections are instead applied at different stages of the signal’s preparation for transmission.

**B. Requiring Such Simultaneous Occurrence of the Two Frequency Offset Corrections Reflects a Technically Flawed Understanding of the Subject Matter Disclosed and Claimed in the Subject Patent Application**

The two types of errors corrected for in this case, namely carrier frequency offset errors and sampling frequency offset errors, are widely known in the art to plague digital communication systems. These are separate and independent sources of error.

Carrier frequency refers to the frequency of a carrier signal on which a data-carrying signal is modulated for transmission purposes. This is done at the transmitting side of a communication system. When the transmitted signal is received at the receiving side, the received signal must then be demodulated to extract the data-carrying signal from its carrier signal. If the carrier signal frequency used at the receiving side does not exactly match (or is offset from) the

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carrier signal frequency used at the transmitting side, errors result in the demodulated signal. As the Specification states in this regard, "[c]arrier frequency offsets result in the received signal being demodulated by a wrong carrier frequency," (Specification, page 1, line 18). The carrier frequency offset correction recited in the Claims pertains to this type of error.

Sampling frequency refers to the frequency at which an analog signal (continuous signal variable over time) is discretely sampled at successive points for conversion to digital signal form. Obviously, if the data-carrying signal is sampled at a particular frequency at the transmitting side, the same sampling frequency should ideally be used in processing the data-carrying signal at the receiving side. This does not always happen in practice, however, and as the Specification notes, "sampling frequency offsets result in the data being sampled at the wrong time instants," (Specification, page 1, lines 19-20). The sampling frequency offset correction recited in the Claims pertains to this type of error.

This sampling frequency offset error correction has nothing directly to do with the carrier signal and the errors occurring during the modulation or demodulation process. This type of correction corrects independently for an altogether different source of error than the carrier frequency offset correction does. One of ordinary skill in the art would have amply recognized this from the Specification and Drawings as originally filed.

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It is not surprising, then, that the Specification and Drawings as originally filed disclose applying the two types of frequency offset corrections at different stages of processing as a signal is prepared for transmission. FIG. 3 of the originally-filed Drawings (copy attached as Exhibit A) clearly illustrates the carrier frequency offset correction being applied to the carrier signal frequency during "modulation" (within the block labeled 304 in that embodiment). On the other hand, FIG. 5 of the originally filed Drawings (copy attached as Exhibit B) clearly illustrates the sampling frequency offset error correction being applied outside of the modulation process. This correction is applied during the rate-conversion and interpolation process (which occurs at block 506) well after modulation of the data signal has already occurred (at block 504 in that embodiment). The Specification also refers to alternate embodiments where the correction of sampling frequency offsets may be applied at other stages apart from modulation, such as in "the analog-to-digital converter (ADC) and/or digital-to-analog converter (DAC)," (Specification, page 13, lines 15-16).

If anything, the Specification makes clear that these errors are to be corrected at different stages of processing. Both corrections may be readily applied, each at its appropriate stage of processing.

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### III. CONCLUSION

Despite the Examiner's understanding to the contrary, there is no reason why the two error corrections are incompatible. There is no reason why combined use of the two frequency offset corrections cannot be made. In fact, the Specification and Drawings as originally filed clearly show that these corrections are to be applied at different stages of signal processing. As such, they may be used together in processing the signal; however, there is no technical merit in requiring their occurrence "simultaneously," at the same time, as the Examiner and the Board mistakenly presumed.

Wherefore, it is respectfully requested that the Board reconsider its Decision to the extent that it found the Claims non-enabled, and reverse the Examiner's rejection of Claims on Appeal under 35 U.S.C. § 112, first paragraph.

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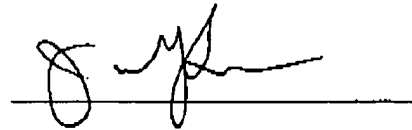
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If there are any charges associated with the filing of this Request for Rehearing, the Director of Patents and Trademarks is hereby authorized to charge Deposit Account #18-2011 for such charges.

Respectfully submitted,

For: ROSENBERG, KLEIN &amp; LEE



Jun Y. Lee

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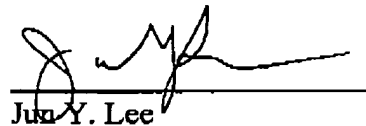
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For: ROSENBERG, KLEIN &amp; LEE

19 October 2009  
Jun Y. Lee

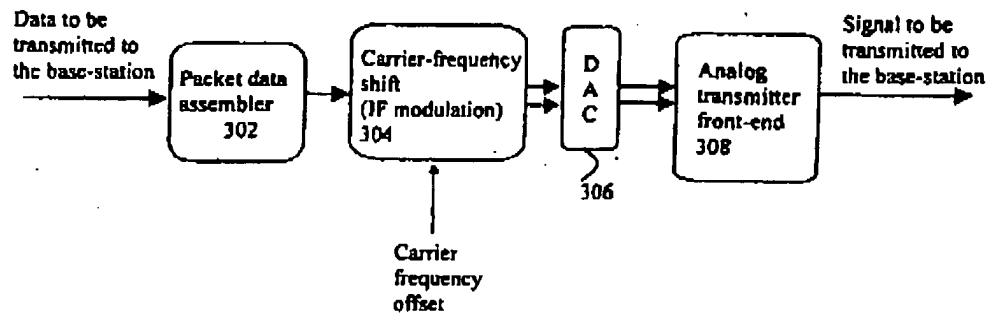


FIG. 3

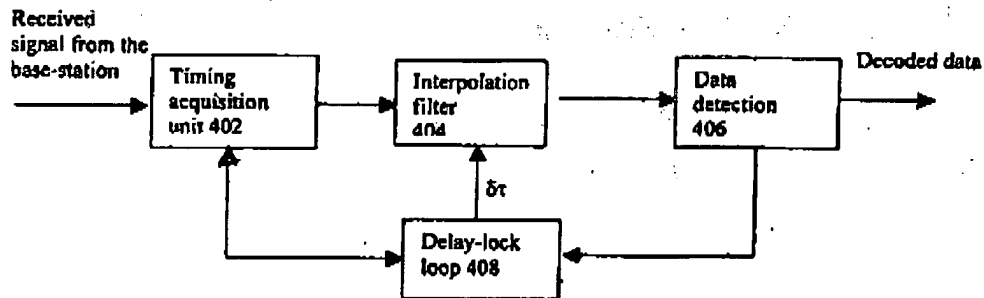


FIG. 4

Exhibit A



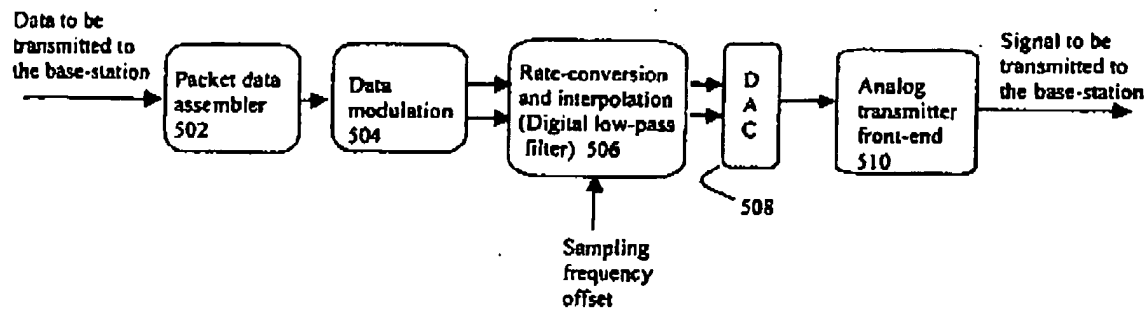


FIG. 5

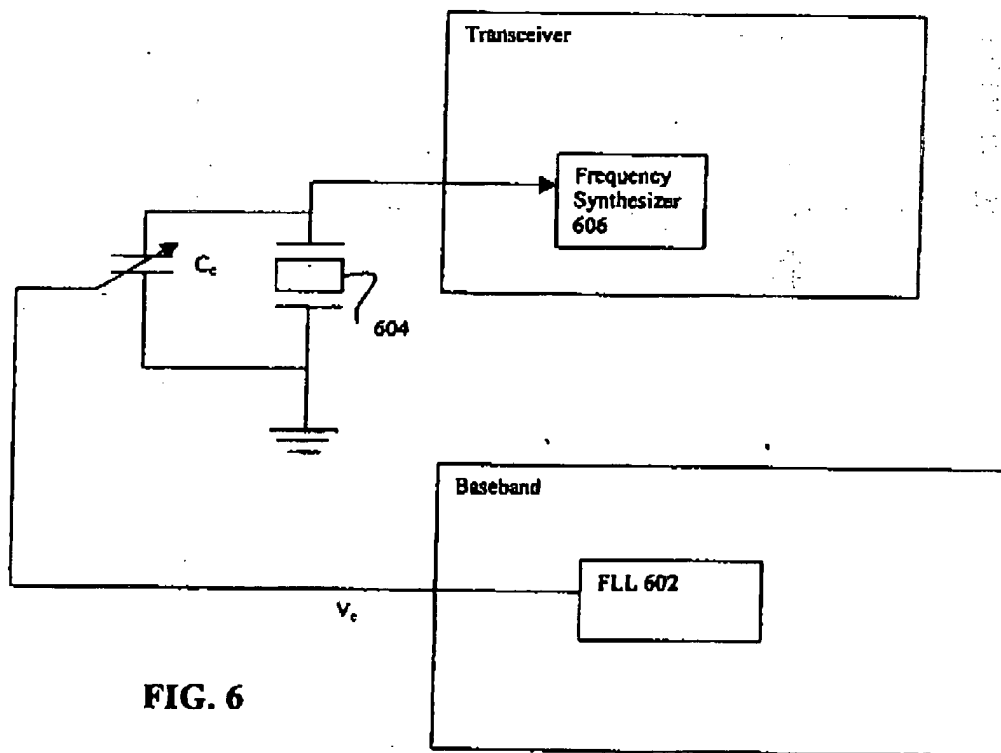


FIG. 6

Exhibit B